

# A SEGREGATED STABILIZED FORMULATION FOR COMPRESSIBLE FLOWS

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Staggered strategies have the potential for less demanding computer resources than fully coupled techniques. Therefore a segregated formulation is presented for the computation of compressible flows. The variational formulation is based on the stabilized GLS finite element method, with the set of pressure primitive variables as independent variables. Then a staggered predictor multi-corrector algorithm is set up to solve iteratively for the variables. It is known that this strategy has poor stability, mainly in the presence of strong discontinuities. Thus, in the present approach, the two thermodynamic variables are solved together, enhancing the global stability of the staggered algorithm. The stabilizing matrix employed is based on a simplified version. Several numerical examples show the ability of the new strategy to handle both, subsonic and supersonic compressible flows. Although the staggered strategy is less memory demanding than the fully coupled algorithm, in general, it is less robust. This fact is translated into smaller maximum CFL numbers for advancing the solution in time.

## References

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